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EXAMINER

FINEMAN, LEE A

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 11/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/056,868

Applicant(s)

BENDALL ET AL.

Examiner

Lee Fineman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A-SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-86 is/are pending in the application.
- 4a) Of the above claim(s) 4, 41-43, 47, 49, 80-82, 84 and 86 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-40, 44-46, 48, 50-79, 83 and 85 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3,4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species I and subspecies A and Y in Paper No. 6 is acknowledged. Claims 4, 41-43, 47, 49, 80-82, 84 and 86 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim.

Drawings

2. The drawings are objected to because of the informalities indicated on the attached "Notice of Draftsperson's Patent Drawing Review," PTO-948. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. While the claims are considered part of the original disclosure, a written description of the claimed details must be described in the specification. Accordingly, the specification should be amended to include wherein said calibration means includes means for color balancing (claims 18 and 64) and the step of adjusting said optical characteristics data set so that said probe is operable in a medium with an index of refraction other than air (claim 63). See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction is required.

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4. The disclosure is objected to because of the following informalities: On page 16, line 11

~~“field calibration 18” should be --field calibration 218--.~~

Appropriate correction is required.

Claim Objections

5. Claim 53 is objected to because of the following informalities: On lines 3-4, “said borescope or endoscope” lacks antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 15-16, 19-20 and 65 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 15 and 16, the phrase “is effective for” renders the claim indefinite because it cannot be positively ascertained whether the associated limitations following the phrase are within the metes and bound of the claimed combination.

Claims 19-20 and 65 include the limitation “consists of at least.” The transitional phrase “consist of” excludes elements not listed in the claimed phrase while “at least” implies that there can be an unlimited number of elements. Therefore, the claims are indefinite, because it is unclear what elements are included in the limitation.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-2, 5 and 50-51 are rejected under 35 U.S.C. 102(e) as being anticipated by Igarashi, U.S. Patent No. 6,471,642 B1.

Igarashi discloses a device for viewing an object with a probe (fig. 1) comprising an image splitting means (A) for splitting an image of said object into a first (I_{1R}) and second (I_{1L}) adjacent stereo image parts which are symmetrical (fig. 1); image detecting means (11_R , 11_L) for detecting stereo image parts; and focusing means (L_{b1}) for focusing said two stereo image parts from said image splitting means (A) to said image detecting means (11_R , 11_L); wherein said focusing means includes only one optical axis (fig. 1); and wherein the views of said first (I_{1R}) and second (I_{1L}) adjacent stereo image parts converge at a given object distance such that said views overlap 100% at said object distance (fig. 1). The method of utilizing the structure of the claim is inherent therein.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 3 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi in view of Sheiman, U.S. Patent No. 4,772,094.

Igarashi discloses the claimed invention except wherein the image splitting means includes a refractive image splitting prism. Sheiman teaches a stereoscopic system (fig. 3) with a refractive image splitting prism (17). While Sheiman shows the prism combining two images into one, one skilled in the art could also use the prism to split one image into two. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the image splitting means of Igarashi with the refractive image splitting prism of Sheiman to provide a simple low cost system (column 4, lines 17-20, Sheiman). The method of utilizing the structure of the claim is inherent therein.

12. Claims 6 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi in view of Sheiman as applied to claim 3 above, and further in view of Sakiyama et al., U.S. Patent No. 6,063,023.

Igarashi in view of Sheiman as applied to claim 3 above disclose the claimed invention except wherein the refractive image splitting prism is contained within a detachable distal tip of said device. Sakiyama et al. teach a device for viewing an object with a probe (figs. 4 and 5) wherein the image splitting means (21, 22) is contained within a detachable distal tip (4, column 6, lines 55-56) of said device (figs. 4 and 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the refractive image splitting prism in the distal tip of Igarashi in view of Sheiman and make it detachable as suggested by Sakiyama et al.

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to be able to quickly change tips for different imaging needs (column 2, lines 27-31). The method of utilizing the structure of the claim is inherent therein.

13. Claims 7 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi in view of Sheiman as applied to claim 3 above, and further in view of Miyano et al., U.S. Patent No. 5,840,014.

Igarashi in view of Sheiman as applied to claim 3 above disclose the claimed invention except for further comprising a window disposed between said prism and said object, wherein contact is prevented between external media and said image splitting prism. Miyano et al. teach a device for viewing an object with a probe (figs. 1 and 2) further comprising a window (11) disposed between the elements (5-7) and an object, wherein contact is prevented between external media and the elements (fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a window between the prism and the object in the system of Igarashi in view of Sheiman to protect the prism and other elements of the system from being contaminated (column 1, lines 17-22).

14. Claims 8-13, 15-30, 39-40, 44-46, 48, 55-70, 75-79, 83 and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi in view of Sakiyama et al.

Regarding claims 8-10 and 55-57, Igarashi discloses the claimed invention except for a display means for viewing said stereo image parts as detected by said image detecting means; wherein only one of said stereo image parts is displayed; and further comprising a viewing means for viewing said first and second image parts such that a right-hand part goes to a right

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eye of a viewer and a left-hand part goes to a left eye of said viewer, wherein said viewer is provided with a three dimensional perspective. Sakiyama et al. teach a device for viewing an object with a probe (figs. 1 and 2) with a display means (14) for viewing said stereo image parts as detected by said image detecting means (28); wherein only one of said stereo image parts is displayed (fig. 23B); and wherein the device further comprises a viewing means for viewing said first and second image parts such that a right-hand part goes to a right eye of a viewer and a left-hand part goes to a left eye of said viewer, wherein said viewer is provided with a three dimensional perspective (column 17, lines 50-64). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the display and viewing means of Sakiyama et al. to the device of Igarashi to be able to view the images taken in various ways and perspectives.

Regarding claim 11, Igarashi discloses the claimed invention except wherein at least one of first and second portions of said image are displayed at a different magnification from said first and second image parts, with both said at least one of first and second portions and said first and second image parts being displayed concurrently. Sakiyama et al. teach wherein at least one of first and second portions of said image are displayed at a different magnification from said first and second image parts, with both said at least one of first and second portions and said first and second image parts being displayed concurrently (column 8, lines 36-38). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make and view the images parts of Igarashi different magnification to provide flexibility in examining object characteristics.

Regarding claims 12-13, 15-21, 23-24, 26, 44, 58-66, 68 and 83, Igarashi discloses the claimed invention except for further comprising a measurement means with an optical character set including optical mapping distortion, magnification at one or more object target distances and parallax information, for comparing parameters of said first and second stereo image parts so that measurement data of said object are determined, wherein said measurement data includes at least one geometric characteristic of said object; wherein said device receives and uses one of a plurality of detachable distal tips, wherein each of said tips has a corresponding optical character data set and wherein data determined from said image is used to select which optical characteristics data set corresponds to said detachable tip in said probe; wherein the optical characteristics data set is adjusted so the probe is operable in a medium with an index of refraction other than air; wherein the optical characteristics data set is stored in non-volatile memory; wherein said measuring means includes using at least one onscreen cursor; and further comprising a calibration means for generating said optical characteristics data set of said device, wherein said calibration means includes a plurality of object target points which appear in both of said first and second stereo image parts when viewed with said probe and includes using a reflection of illumination at at least one known object target distance and a means for color balancing. Sakiyama et al. teach a measurement means (figs. 8-13) with an optical character data set (S104) including optical mapping distortion, magnification at one or more object target distances and parallax information (column 6, lines 15-21) and for comparing parameters of said first and second stereo image parts so that measurement data of said object are determined, wherein said measurement data includes at least one geometric characteristic of said object (length, column 12, lines 10-16 and lines 47-60); wherein said device receives and uses one of a

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plurality of detachable distal tips (4, column 6, lines 55-56), wherein each of said tips has a corresponding optical character data set and wherein data determined from said image is used to select which optical characteristics data set corresponds to said detachable tip in said probe (column 6, lines 1-53); wherein the optical characteristics data set is stored in non-volatile memory column 6, lines 9-14); wherein said measuring means includes using at least one onscreen cursor (column 17, lines 29-30); and further comprises a calibration means (figs. 6A, 6B, 7A, 7B) for generating said optical characteristics data set of said device, wherein said calibration means includes a plurality of object target points which appear in both of said first and second stereo image parts when viewed with said probe (column 7, lines 61-column 9, lines 42) and includes using a reflection of illumination at at least one known object target distance (in so far as an image is a reflection of illumination) and a means for color balancing (column 9, lines 36-42 and column 11, lines 14-20 with column 14, lines 56-58, in so far as the color must be balances to compare the luminance). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the measuring means, calibration means and detachable tips with optical characteristics data sets of Sakiyama et al. in the system of Igarashi to be able to quickly and accurately measure different specific characteristics of the object. Further, regarding claims 26 and 63, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the optical characteristics data set so the probe is operable in a medium with an index of refraction other than air, since it is been held that discovering an optimum value of a result effective variable involves only routine skill in the art. One would have been motivated to adjust the data set for the purpose of providing accurate data for calibration and measurement when using different probes. *In re Antonie*, 559 F.2d 618, 195

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USPQ 6 (CCPA 1977) See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In as much as the claims 19, 20 and 65 are able to be understood in light 35 U.S.C. 112 rejection made above the rejection applies.

Regarding claims 22 and 67, Igarashi in view Sakiyama et al., as applied to claims 17 and 60 above, disclose the claimed invention but do not explicitly state whether detection of the plurality of object target points are automatic. It would have be obvious to one having ordinary skill in the art at the time the invention was made to automate the detection of the plurality of object target points since it has been held that broadly providing a mechanical or automatic means to replace manual activity which accomplishes the same result involves only routine skill in the art. One would have been motivated to automate the detection of the plurality of object target points in order to more quickly establish calibration of the images. *In re Venner*, 262 F.2d, 91, 95, 120 USPQ 193, 194 (CCPA 1958)

Regarding claims 25, 48 and 85, Igarashi in view of Sakiyama et al. as applied to claim 12 above, does not explicitly state that the optical characteristics data set, the first and second image parts and said determined measurements are stored in a single file. Official Notice is taken that storing many different values in a single file is well known. It would have been obvious to one having ordinary skill in the art at the time the invention was made to store the optical characteristics data set, the first and second image parts and said determined measurements in a single file to consolidate memory space and provide easy data manipulation.

Regarding claim 27-30, 69-70 and 75-77, Igarashi in view Sakiyama et al., as applied to claims 12 and 58 above, further disclose wherein said measuring means includes matching means (Sakiyama, figs. 14A, 14B, 19 and 20, column 13, line 24-column 14, line 4) for

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automatically matching a same user-designated point (PP1, PP2) viewed on said object in each of said stereo image parts and means for requesting user selection of a correct matched point from a plurality of automatically-identified possible matches (Sakiyama, column 14, lines 35-40, in so far as when the correlation is smaller than a given value, the user can manually pick a match from the small area being viewed, which is a plurality of possible matches) and determining an overlap region of the stereo image parts in which measurement are performed (column 14, lines 4-16). Regarding claim 30, for each point picked the matching will occur (figs. 14A, 14B).

Regarding claims 39-40 and 78-79, Igarashi in view Sakiyama et al., as applied to claims 12 and 58 above, further disclose wherein said measuring means includes means for indicating a measurement accuracy of said measurement (column 14, lines 35-37) and wherein said measuring means includes mean for an operator to designate a maximum estimated error limit above which said device indicates a warning (column 14, lines 35-40, in so far as coefficient of normalization correlation is below a given value which must have been designated by at least the first operator).

Regarding claim 45 and 46, Igarashi in view Sakiyama et al., as applied to claim 44 above, further disclose a menu bar (64, fig. 23B) but does not explicitly state whether a symbol, which indicates both a type of measurement being performed and a role of said cursor in said type of measurement and wherein at least one measurement point designated by a user when performing one type of measurement is kept event when a different type of measurement is selected. Graphic User Interface (GUI) systems that use menus, symbols and cursors and “point and click” selections allow the user to quickly navigate the monitor’s images/windows and

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perform tasks in an easy to understand way are well known to one of ordinary skill in the art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the system of Igarashi in view Sakiyama et al. a GUI system to allow the user easy understanding and navigation of the monitor's images/windows, including the "point and click" technology which would hold a measurement point while changing tasks.

15. Claims 14, 31-34, 36-38 and 71-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi in view of Sakiyama et al., as applied to claim 28 above, and further in view of Hori et al., U.S. Patent No. 6,191,809 B1.

Regarding 31-33, 36-38 and 71-74 Igarashi in view of Sakiyama et al., as applied to claim 28 above disclose the claimed invention except for said automatic matching means including a global alignment means for performing an automatic global alignment of said first and second image parts and including a means for determining vertical and horizontal shifts between the first and second image parts; wherein the data derived from said global alignment means is used to make automatic matching faster and reduce a probability of incorrect matches of subsequent user-defined points. Hori et al. teaches a stereoscopic device (fig. 1) that includes global alignment means for performing an automatic global alignment of said first and second image parts (column 5, lines 43-54) and including a means for determining vertical and horizontal shifts between the first and second image parts (figs. 9A and 9B, column 7, line 6- column 7, line 49). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the global alignment means of Hori et al. in the system of Igarashi in view Sakiyama et al. to further correct for any visual image misalignment. Also,

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regarding claims 36 and 37, the addition of the global alignment means would reduce the probability of incorrect matches of subsequent user-defined points and make the matching faster because the image parts would already be visually more aligned and less calculations would be necessary. Regarding claim 38, the data from the global alignment means would be incorporated into the position of the images for determining overlap as stated above with regard to claim 77.

Regarding claim 14, Igarashi in view of Sakiyama et al. Hori et al., as applied to claim 31 above disclose the claimed invention except for a difference between said optical characteristics data set and the global alignment data being determined and signaling a user. It is well known to one of ordinary skill in the art to compare variables within a system to ensure the accuracy of the data in the system and to further notify the user of the results. It would have been obvious to one of ordinary skill in the art at the time the invention was made to compare said optical characteristics data set and the global alignment data to verify the accuracy of the data and to further notify the user of a difference to be able to correct any problems quickly.

Regarding claim 34, Igarashi in view of Sakiyama et al. Hori et al., as applied to claim 31 above disclose the claimed invention but are silent as to whether the points used in the global alignment process are user-designated matched points or automatically determined points. Since either set of points yields the same results, it would have been obvious to one of ordinary skill in the art at the time the invention was made use any of the above sets of matching points in order to provide correct input data for the global alignment process.

16. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi in view of Sakiyama et al. and Hori et al., as applied to claim 31 above, and further in view of Ko, U.S. Patent No. 5,710,428.

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Igarashi in view of Sakiyama et al. and Hori et al., as applied to claim 31 above disclose the claimed invention except for wherein a correction by a user of an incorrect automatic match automatically invokes said global alignment means. Automated feedback loops that include user override are well known for providing automatic control over a variable while still being able to correct for unforeseen problems. For example, Ko uses an automatic feedback loop to correct the image displayed in the system (column 2, lines 43-52) as well as a user override to provide even better images when needed (column 2, lines 53-60). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a user override within the automatic system of Sakiyama et al. and Hori et al. to correct for unforeseen problems like an incorrect match.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee Fineman whose telephone number is (703) 305-5414. The examiner can normally be reached on Monday - Friday 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (703) 305-0024. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

LAF
November 2, 2003


MARK A. ROBINSON
PRIMARY EXAMINER